

## Ideation Phase

### Brainstorm & Idea Prioritization Template

Date	19 September 2022
Team ID	Team-592538
Project Name	AUTOMATED PREDICTION MODEL FOR DIABETIC RETINOPATHY USING CNN
Maximum Marks	4 Marks

### Brainstorm & Idea Prioritization:

### Step-1: Team Gathering, Collaboration and Select the Problem Statement

Template

## Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 🕒 10 minutes to prepare
- 🕒 1 hour to collaborate
- 👤 2-5 people recommended

### Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

🕒 10 minutes

#### Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

#### Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

#### Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#) →

### Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

#### PROBLEM

Creating a highly accurate and efficient automated prediction model for diabetic retinopathy to enhance early diagnosis and management while streamlining clinical processes, reducing risks, and preserving patients' vision.

#### Key rules of brainstorming

To run a smooth and productive session

Stay in topic.

Encourage wild ideas.

Defer judgment.

Listen to others.

Go for volume.

If possible, be visual.

## Step-2: Brainstorm, Idea Listing and Grouping

2

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

3

### Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you can break it up into smaller sub-groups.

20 minutes

#### Person 1: Ravulapalli Sai Krishna

##### Model Improvement:

- Transfer Learning with Pre-trained Models:** Leverage transfer learning by fine-tuning pre-trained CNN models (e.g., ResNet, VGG) on retinal images to boost accuracy and efficiency.
- Multi-Modal Integration:** Integrate multiple imaging modalities, such as fundus photography and optical coherence tomography (OCT), to create a more comprehensive prediction model that considers different aspects of retinopathy.
- Explainable AI:** Incorporate explainability features into the model to provide transparent and interpretable insights for healthcare professionals, ensuring trust and clinical understanding.

#### Person 2: Sadineni Varun Kumar

##### Data Enhancement and Augmentation:

- Synthetic Data Generation:** Develop techniques for generating synthetic retinal images to expand the dataset and improve the model's generalization capabilities, especially for rare retinopathy cases.
- Cross-Dataset Validation:** Include diverse and multi-center datasets for training and validation to enhance the model's robustness and adaptability to different patient populations.
- Adaptive Learning:** Implement techniques that allow the model to adapt and learn from real-time data during clinical use, refining its predictions based on new insights.

#### Person 3: B.Lokesh Vardhan

- Robust Dataset Collection:** Ensure a comprehensive and diverse dataset of retinal images, including various stages and manifestations of diabetic retinopathy, to train the model effectively.
- Hyperparameter Tuning:** Experiment with different hyperparameters in the CNN architecture, such as the number of layers, filter sizes, and learning rates, to optimize model performance.
- Cross-Validation:** Implement cross-validation techniques to assess the model's generalization and reduce the risk of overfitting.

- Data Collection and Preparation:** This group can focus on collecting and organizing a dataset of retinal images, ensuring they are labeled accurately for model training. Basic computer skills and data management expertise are essential.
- Model Development:** Create a team responsible for building and fine-tuning the CNN model. Members can collaborate to design the architecture, set hyperparameters, and train the model using basic programming and machine learning skills.
- Clinical Workflow Optimization:** optimize the integrate of the model into clinical workflows, ensuring seamless operation and efficient use in healthcare settings.
- Feedback Incorporation:** actively gather and incorporate user feedback and recommendations into the ongoing project development to continuously improve the model and its usability.

## Step-3: Idea Prioritization

4

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

20 minutes

#### TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the H key on the keyboard.

